Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE FIELD OF PROPOSITIONS THAT HAVE FULL FACTUAL WARRANT[1]

IN a paper[2] read before this association at the Cornell meeting I adopted the following division of propositions made on the basis of the *source of their warrant:* Those propositions are *primitive* which are not inferences from other propositions used as premises, in short, that are ultimate premises; whereas those propositions which are inferred or can be inferred from others are *secondary.* Primitive propositions, in turn, are of three types: (1) axioms, or postulates; (2) logical leaps, or guesses; (3) propositions that have full factual warrant. Further, I endeavored to prove that there are, underlying our knowledge, these propositions that have full factual warrant. Following tradition, we may call them also self-evident truths, or synthetic judgments *a priori* based upon intuition. If we adopt as our definition of a proposition, *a relation obtaining between terms,* those propositions are intuitions in which *the terms and their relation are actually present in the apprehended content,* that is, are all factual. Finally, this class of propositions we found to be different from all others in that it does not come under the laws of formal logic. Thus these propositions rank logically higher even than the sufficient and necessary postulates of some parts of science, such as geometry; for though such postulates are logically independent so far as their particular science is concerned, they come under logical laws when brought into relation to other systems of science.

The purpose of the present paper is to sketch a map, but only a rough one, of the field of these self-evident propositions. Much that I have to say has been said in part by others, but not, it seems to me, as a whole, bearing upon the one problem.

First, we can limit the field of intuition by excluding from it whatever is made necessary by the foregoing classification of propositions. That is, any proposition which proves upon analysis to be secondary, or to be either a postulate or axiom or a logical leap, is by definition not an intuition. This excludes at least two important types, *causal* and *existential* propositions.

Under causal propositions I do not mean to include the so-called causal relation of theoretical mechanics; for, as Russell has shown,[3] this relation, as it appears in mechanics, is simply mathematical implication. Nor do I include the results of any attempt to reduce causation to an identity. I refer simply to the causal relation as understood by Hume and Kant. It is that relation through which a term at one time implies a term at another time, and in which this implication is either a logical leap or presupposes a logical leap. Hence it does not belong to the field of intuition.

---

[1] A paper read before the American Philosophical Association, in Baltimore, December, 1908.

[2] "The Factual," the *Philosophical Review,* May, 1908.

[3] "Principles of Mathematics," Vol. I., Chap. LV.

Moreover, intuitions seem to be non-existential. Some metaphysicians use the word "to exist" in the sense that I use the word "fact"; but it is important to keep the two distinct. That is, I should say, the factual is immediately revealed to us, but the existent is always inferred. Thus interpreted there appear to be two remaining uses of the word "to exist"; although few recent writers help us by giving a formal definition of this most important relation. First, an existential proposition implies *some possible future percept,* and is, therefore, a rather complex causal relation. As such it falls without the field of intuition. Secondly, an existential judgment is one in which *we apply our knowledge.* If we accept this meaning, all pure science is to be regarded as strictly non-existential and as becoming existential only when we apply it to the facts. So the most primitive form of an existential judgment is the reaction accompanying any of our percepts, or rather its implications. The word "apply" in this sense seems equivalent to Royce's expression, the "external meaning of an idea," and is, perhaps, indefinable. However, our present problem raises only the question: Can we apply knowledge without assuming axioms, postulates, or logical leaps, and especially without asserting some causal relation? It seems to me, we can not; and therefore, although factual propositions may be involved, yes, are involved, no existential proposition is merely a factual proposition or even a primitive proposition.

How shall we describe affirmatively this field that we have so far limited by exclusion? We can do so by answering three questions: First, what fundamental relations do these judgments assert as obtaining between their terms? Second, how far is generalization possible within their field? Third, what place do these propositions occupy in the several branches of knowledge?

What fundamental relations obtain between the terms of propositions that have full factual warrant? If I mistake not, these can be put under four main headings. First, *the apprehension of likeness or difference between terms.* This includes, of course, not only those instances where we apprehend the respect in which the terms are alike or different, but also those instances where we are aware of mere likeness or difference. Secondly, there are *the various relations apprehended between a whole and its parts.* Here, too, we are dealing with a vast array of instances varying from cases such as Ebbinghaus's illustration—a cumulus cloud with its massive parts heaped together, all standing out against a clear summer sky—all the way to cases such as we have in our attempts to intuit the abstract laws of the logic of classes. Thirdly, there are *intuitions of order and of magnitude.* Here, too, we are dealing with numberless instances: so far as they can be intuited, numerical, spatial and temporal order and magnitude, the orders of the colors and of notes, the order and magnitude of the so-called intensities, order of values, and so on. Fourthly, there should be added to these three *those instances where we apprehend the presence or absence of some term in the factual field.* Perhaps this group is reducible to the first, but its importance and distinctness justify making of it a separate class. In the first place, it comprises *those instances where we fail to find a certain term in the field under scrutiny:* for example, the locomotive engineer looking from his cab window at night and finding no red light in *his* field of vision. In the second place, this class comprises *those instances where we do find in the factual field that for which we are looking, and again where we apprehend exhaustively all the terms of a given sort that are present.* Many of the experiments in which we are testing the number of objects that can be attended to at once give illustrations of the latter class, as does also any one of numerous other cases, such as when we can see at a glance how many people are in the room, or how many fingers are held up, or how many lamps stand on a table.

This list of four types may seem to many altogether too short. We might try to lengthen it by seeking evidence in factual contents that are vague and obscure; for example, in vague feelings of tendency, in the vague drift of passing time, or in the fringe of the field. In them we are usually aware of the presence of relations without explicitly apprehending the relations themselves. But our question asks only what explicit relations does analytic attention discover, and I have thus far failed to find additional types.

I pass now to the second question: How far is generalization possible within the field of the factual? From Kant until the present day the traditional place in which to seek for an answer is the foundations of mathematics and, above all, of the Euclidean geometry. Here, it has been said, we get intuitions that are high generalizations. Unfortunately Kant does not show us in detail the manner of these intuitions. Equally unfortunate is it that those mathematicians who still maintain that intuition plays an essential rôle in mathematical progress do not seem to understand precisely what the word intuition ought to mean. For example, Borel[4] means by intuition those remarkable insights of the mathematical genius in which he seizes upon some formula and beholds in it a premise with highly important implications. Such insights are logically complex and often contain logical leaps. They belong to the class of lucky hits, or guesses, made usually after many an unsuccessful one, so characteristic of genius in every field of investigation. Poincaré[5] argues that the mind, after making a certain construction, can intuit its ability to make similar ones *ad infinitum,* and so "by recurrence" get truths holding good of a class with infinite members. As we shall argue presently, the mind can approach such insights and by way of suggestion can give us such a postulate, but it can not literally intuit infinite repetitions of its own acts or any other class with a large number of members.

---

[4] "La logique et l'intuition en mathématiques," *Revue de Métaphysique et de Morale,* 1907.

But is it possible to generalize at all without going beyond the intuited field? Psychology has shown that we can intuit small groups, but not large ones; hence it is possible to generalize highly, if at all, not through *extensive,* but through *intensive* judgments. If the field intuited is quite simple, and if the terms and their relation are essential to a number of similar cases and are readily seen to be such, then by apprehending this relation we get a proposition warranted by the factual and holding possibly of a vast number of cases beyond the present intuition. In such a case we have, it is true, an intuition which is general, but not one which makes evident how far new cases will contain the same terms and their relation.

Looking at a piece of scarlet paper and at a piece of vivid green paper, we are aware that they differ. Further, if we see a series of reds we are aware that they are somewhat alike, though we are unable to picture this red *in abstracto.* The corresponding truth holds regarding a series of greens. Now our question is, Can we be aware intuitively that this red *in abstracto* differs from the green *in abstracto?* Certainly we can, and therefore we have an intensive proposition that is a generalization. However, there is no guarantee that there are not reds and greens so different from the ones which we are beholding that they would fail to differ as do these; for we might have taken a series of blues and of greens and have inferred that blues and greens are never alike, not having seen the blue-greens and the green-blues. Thus in asserting that fairly high *intensive* generalization is possible in the field of intuition we look for justification to those statements of introspective and analytic psychology in which we are told that our attention can be concentrated upon features, elements, or relations common to several mental states, even when it is quite impossible to picture them abstracted from their context.

That intuition has played a rôle in the history of mathematics is beyond doubt; but it is by no means easy to determine just where intuition leaves off and the use of postulates begins. In fact, it probably differs markedly for different minds. I believe, as probably do most, that the intuitions underlying mathematics are far rougher, that is, less general than, for example, the axioms of Euclid often referred to as intuitions. That a straight line is the shortest distance between two points, and that only one line can pass through two points, are intuitions if limited to such cases as can be literally apprehended by the mind. If, however, they are generalized to the extent necessary for geometry, they get beyond anything intuitable and, although *suggested* by what we can intuit, pass over into the field of postulates or deductions from postulates.

---

[5] "Science and Hypothesis," Chap. I.

A similar situation confronts us in logic. Are any or all of the foundations of logic intuitions? Intuition certainly underlies some of them in the sense that it gives us generalizations of limited scope, and thereby suggests the generalizations of greater scope. For example, the law of the syllogism as interpreted in the logic of classes ($a<b$, $b<c$, $\therefore a<c$) can certainly be intuited in a less general form; but that it can be intuited in the highly abstract form required by formal logic is quite doubtful.

Thus we conclude: we have propositions with full factual warrant that are generalizations; the most general of these are intensive, not extensive generalizations; and they all are less general than the propositions used in the foundations of logic and mathematics.

Some metaphysicians may urge as an objection that what is not possible if we restrict our cases to the field of sensation and imagination, is possible if we include imageless, or naked, thought—granting with Stout, Woodworth, and others that we have such thought.

Unfortunately the field of thought is an exceedingly difficult one to examine from the standpoint of our present problem. Most instances of thinking, even the simplest instances, are epistemologically more complicated than perceptions, that is, involve more logical leaps; for these at least I should interpret the results of such experiments as thus of Professor Frank Angell[6] on the discrimination of two grays viewed at an interval varying from fifteen to sixty seconds. In the case of these particular reagents the discrimination was not based upon visual imagery, but sometimes upon habitual verbal standards for the shades of gray, and often upon other non-visual, if not purely neural, associations. It certainly looks as though the whole field of thinking is, to a far greater extent than the field of perception, one solely of neural processes; and whatever is neural process has to be interpreted epistemologically as not intuition.

---

[6] "Discrimination of Shades of Gray for Different Intervals of Time," *Philosophische Studien*, XIX.

We admit, of course, that such thought gives us genuine new discriminations and other insights into relationships, and that often, when it is imageless, it is the more efficient. But are these discoveries intuitions or assumptions? Certainly most of them are of the trial and error or experimental type, in short, are tentative assumptions; and it seems inconceivable that they could be anything else. This is not a proposition to be argued. One can simply say, Produce the instances. This, of course, does not mean that they are not often correct and true strokes of genius, for they are often well protected from being mere wild guesses by a wealth of other associated information, and also by a quick perception of some of their implications.

Turning from the question of generalization, let us consider the third question: What place do these propositions having full factual warrant occupy in the several branches of science? The most complete answer to this question has been given by Meinong[7] in recent articles. I think his answer somewhat mistaken and incomplete, due perhaps to his strong tendency toward subjective idealism, but especially due, it appears to me, to the fact that he seems not yet to have adopted the view that mathematics and mechanics are entirely deductive as well as non-existential sciences, and that the pure causal sciences also tend to become deductive and non-existential as they, too, become more and more exact.

The sciences which come nearest to falling entirely within the field of factual propositions are those which come nearest to being purely descriptive, which, of course, no body of knowledge actually is. In short, descriptive science, including introspective psychology, is densely populated with factual propositions.

Next in this respect to pure description comes the pure doctrine of values, including ethical values; for this science is non-existential and, when we exclude the hypothetical imperatives or derivative values, is also non-causal. Moreover, it is not based upon such high abstractions as is mathematics, nor does it carry on such extensive deductions. Next come the empirical beginnings of mathematics, for, as we have said, intuition has played an important part in the history of mathematics. Finally, we must add, the empirical basis of all the causal sciences is the factual. But the place of the factual propositions in their logical relation to mathematics and to the pure causal sciences needs a much more careful statement than the foregoing. As already said, I hold the view not only that mathematics is non-existential, but also that the pure causal sciences tend to become such as they progress. If this view be correct, the office filled by factual propositions in relation to these sciences can be stated with considerable precision.

---

[7] "Über die Erfahrungsgrundlagen unseres Wissens," Berlin, 1906. "Über die Stellung der Gegenstandstheorie im System der Wissenschaften," *Zeitschrift für Philosophie und philosophische Kritik*, Bde. 129 u. 130.

Their work is twofold. First, they form the logical bridge between non-existential science and the body of our existential propositions. In short, we make use of them in applying science to the facts. Second, they bear two important relations to pure science itself. They suggest to science the vast array of her premises. Then, by continually suggesting further premises as science progresses they hold her consistent with numberless factual propositions, and thus they keep the path of her development close to fact.

But all of this is simply another way of saying that all inference is deductive, that inductive inference, robbed of its deductive elements, is a mere logical leap; not an inference, but a suggested premise. In short, intuitions do not give us premises from which causal propositions can be inferred or deduced. They are simply standards with which causal assumptions must be kept consistent.

WALTER T. MARVIN.

PRINCETON UNIVERSITY.

TRANSCENDENTALISM AND PRAGMATISM: A COMPARATIVE STUDY

BETWEEN New England transcendentalism and New England pragmatism there are some striking parallels. Confining our attention to the Emersonian and the Jacobite varieties of these respective movements, we find in each a revolt against tradition and intellectualism and a revival of individualism and emotional responsiveness.[1] The revolt against tradition is an apparent paradox when, along with William James's definition of pragmatism as a new name for some old ways of thinking, we recall these words of Emerson in his essay "The Transcendentalist": "The first thing we have to say respecting what are called *new views* here in New England, at the present time, is, that they are not new, but the very oldest of thoughts cast into the mould of these new times." Nevertheless this common reference to the past by the two representatives of the

---

[1] A. C. Goddard: "Studies in New England Transcendentalism," New York, 1908, p. 5; cf. "Pragmatism in its Relation to the History of Philosophy," a paper read at the Baltimore meeting of the American Philosophical Association, December 30, 1908, by James Gibson Hume; cf. also James Bissett Pratt: "What is Pragmatism?" New York, 1909, p. 37.